Water Quality Report

2003 Annual Report on Your Drinking Water

Redmond, Washington 2004

Safe Drinking Water is Our Highest Priority!

The City of Redmond has a hybrid water system. Residents on the west side of the Sammamish River, in Redmond Ridge and Trilogy drink surface water that comes from the Tolt Reservoir in the Cascade Mountains.

"From the Cascade Mountains to Your Tap"

The Surface Water Source / The Tolt Watershed

(This water is ***soft:*** 25mg/l or 1.2 grains/gallon)

The Tolt Reservoir and Watershed are located east of Redmond in the Cascade Mountains. Rivers, streams and snowmelt are impounded here to make up the reservoir supply. The water travels through a supply pipeline to Redmond and other eastside cities and water districts on its way to Seattle. The Watershed and pipeline are owned by the City of Seattle. Redmond buys this water, and both cities monitor and test it to maintain quality.

Watershed Protection

The Tolt Watershed covers nearly 14,000 acres and is closed to public access. Seattle's aggressive watershed protection plan safeguards the water supply from degradation and human intrusion. The Washington State Department of Health has determined the Watershed to have **low vulnerability** to sources of contamination. Contamination that might occur would most likely be from soil erosion or animal activity.

Treatment

Water treatment of the Tolt supply consists of chlorine disinfection, fluoridation for dental health, and mineral additives (calcium oxide and sodium bicarbonate), which help reduce the water's natural corrosive effect on plumbing in homes and businesses. In 2001 a filtration and ozone treatment facility was completed and put into operation. Filtration removes organic material and makes the water clearer (less turbid). Ozone kills tough pathogens like giardia and cryptosporidium. These improvements also mean less chlorine is needed for disinfection.

2003 Water Quality Data - Tolt System

Detected Compounds	Units	Levels		EPA Limits		Typical Sources
		Average – Range		MCLG – MCL		
FLUORIDE	ppm	1.0	0.6-1.2	4	4	Water additive promotes dental health
BROMATE	ppb	0.6	0-3	0	10	By-product of drinking water ozonation
TURBIDITY	NTU	0.06	0.02-0.16	NA	TT	Soil runoff
TTHM	ppb	43	33-62	NA	80	By-products of chlorination disinfection
CHLORINE	ppm	0.72	0.2-1.26	NA	4 MRDL	Water additive that kills germs
Drinking water from Redmond Ridge and Trilogy requires additional testing because it is re-chlorinated						
TTHM	ppb	47.5	41-64	NA	80	By-products of chlorination disinfectin
HAA5	ppb	38.9	23-52	NA	60	By-products of chlorination disinfection
CHLORINE	ppm	0.53	0.10-1.27	NA	4 MRDL	Water additive that kills germs

No compounds from either system were detected above allowable levels

Residents living east of the Sammamish River drink well water supplied by aquifers. This groundwater supply can be supplemented with Tolt water in the summer months when demand is highest.

"Buried Treasure"

The Groundwater System

*(This water is **medium hard:** 100mg/l or 5.8 grains/gallon)*

In Redmond, east of the Sammamish River, there are underground, water bearing formations called **aquifers**. Over the past 50 years these aquifers have supplied 40% of Redmond's drinking water. In 2003 the City's 5 wells pumped 837 million gallons from the aquifers. This resource is listed by the Department of Health as having **high vulnerability** to potential contamination, because the aquifers are only 50 feet deep.

Groundwater Protection

In 2003 Redmond's City Council passed the *Wellhead Protection Ordinance*. The Ordinance was adopted after years of studying the characteristics of the aquifers that supply our groundwater. Time of travel zones have been determined. These zones delineate areas that contribute to aquifer recharge, and consequently are areas of concern in the event of a contaminant spill. Activities in the zones will be monitored by the City for storage and use of contaminants that could be potential threats to the aquifer. The map on the next page shows the 6-month and 1-year time of travel zones for the wells.

The Redmond *Wellhead Protection Ordinance* was recommended by the Redmond Planning Commission, endorsed by Redmond City Council, and praised by the Washington State Department of Health. To learn more contact Tom Barry, Natural Resources Engineering Supervisor, at (425) 556-2870 or tbarry@redmond.gov.

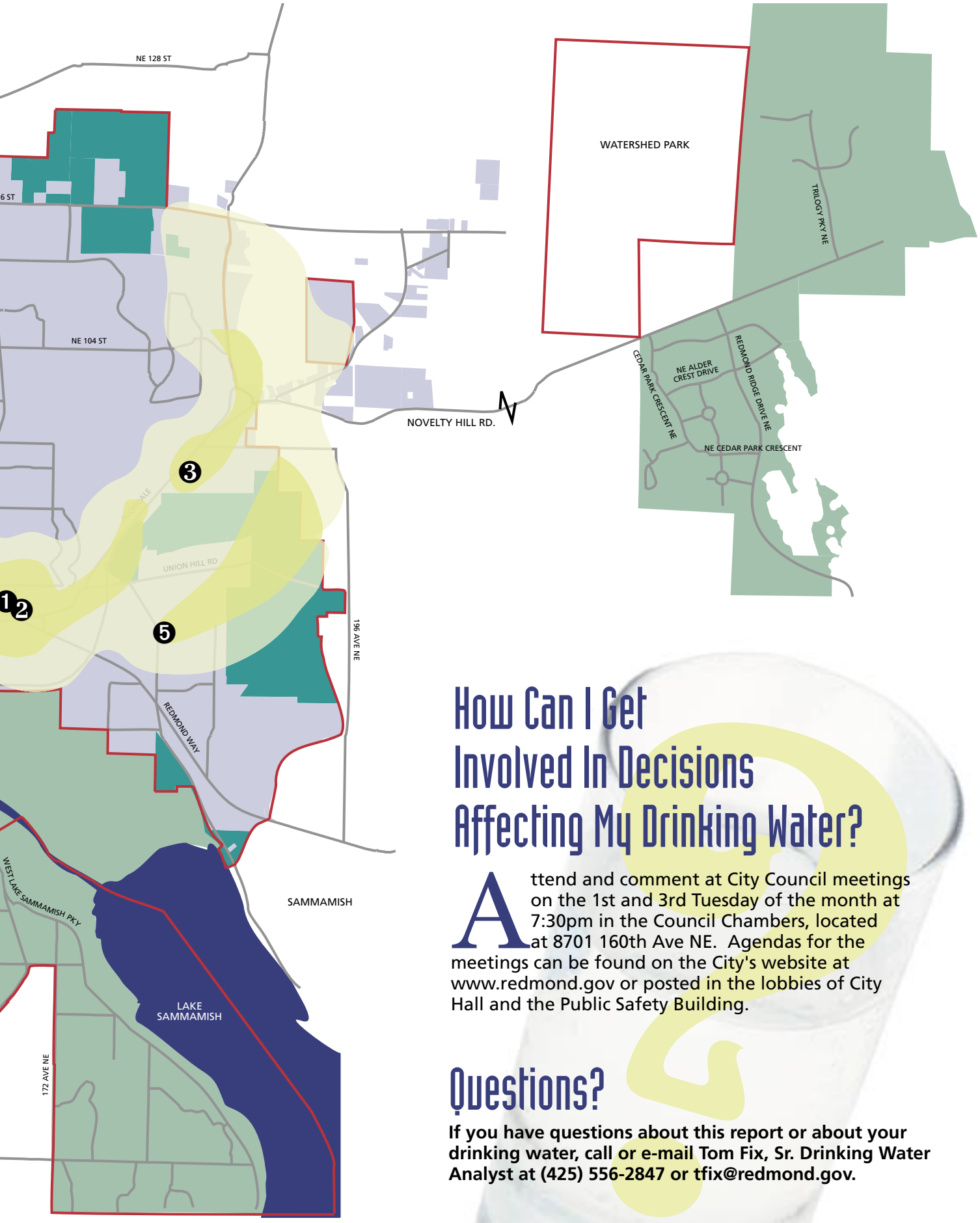
Treatment

Redmond groundwater is treated with 3 common drinking water additives: sodium fluoride, sodium hydroxide, and chlorine disinfection. Fluoride contributes to dental health. Sodium hydroxide raises the pH of the water, thereby making it less corrosive to household plumbing. Chlorine is a safety net that kills disease-causing germs called pathogens, should they get into the water.

2003 Water Quality Data - Groundwater System

Detected Compounds	Units	Levels		EPA Limits		Typical Sources
		Average	Range	MCLG	MCL	
FLUORIDE	ppm	1.17	0.6-1.8	4	4	Water additive promotes dental health
NITRATE	ppm	1.4	0-3.3	10	10	Erosion from natural deposits
ARSENIC	ppb	0.6	0-2	0	10	Erosion from natural deposits
TTHM	ppb	24	7-43	NA	80	By-products of chlorinate disinfection
HAA5	ppb	8.4	1-26	NA	60	By-products of chlorinate disinfection
CHLORINE	ppm	0.53	0.10-1.27	NA	4 MRDL	Water additive that kills germs

MCLG (maximum contaminant level goal): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLG's allow for a margin of safety.
MCL (maximum contaminant level): The highest level of a contaminant that is allowed in drinking water. MCL's are set as close to the MCLG's as feasible using the best available treatment technology.
MRDL (maximum residual disinfectant level)
PPM (Parts Per Million) = 1 ppm = 1 mg/l
PPB (Parts Per Billion) = 1 ppb = 1 ug/1
NTU A measurement of water clarity. High turbidity can interfere with disinfection.
T.T. (treatment technique): A required process intended to reduce the level of a contaminant in drinking water.
TTHM: (total trihalomethane) disenfection by-products.
HAA5: (Haleoacetic acid) disenfection by-products.
NA: Not Applicable.



How Can I Get Involved In Decisions Affecting My Drinking Water?

Attend and comment at City Council meetings on the 1st and 3rd Tuesday of the month at 7:30pm in the Council Chambers, located at 8701 160th Ave NE. Agendas for the meetings can be found on the City's website at www.redmond.gov or posted in the lobbies of City Hall and the Public Safety Building.

Questions?

If you have questions about this report or about your drinking water, call or e-mail Tom Fix, Sr. Drinking Water Analyst at (425) 556-2847 or tfix@redmond.gov.

Drinking Water Safety

Redmond's drinking water is monitored and analyzed every workday, checking for a wide variety of contaminants. Water is drawn from sample stands strategically located throughout the City, and tests are conducted on site and in the laboratory.

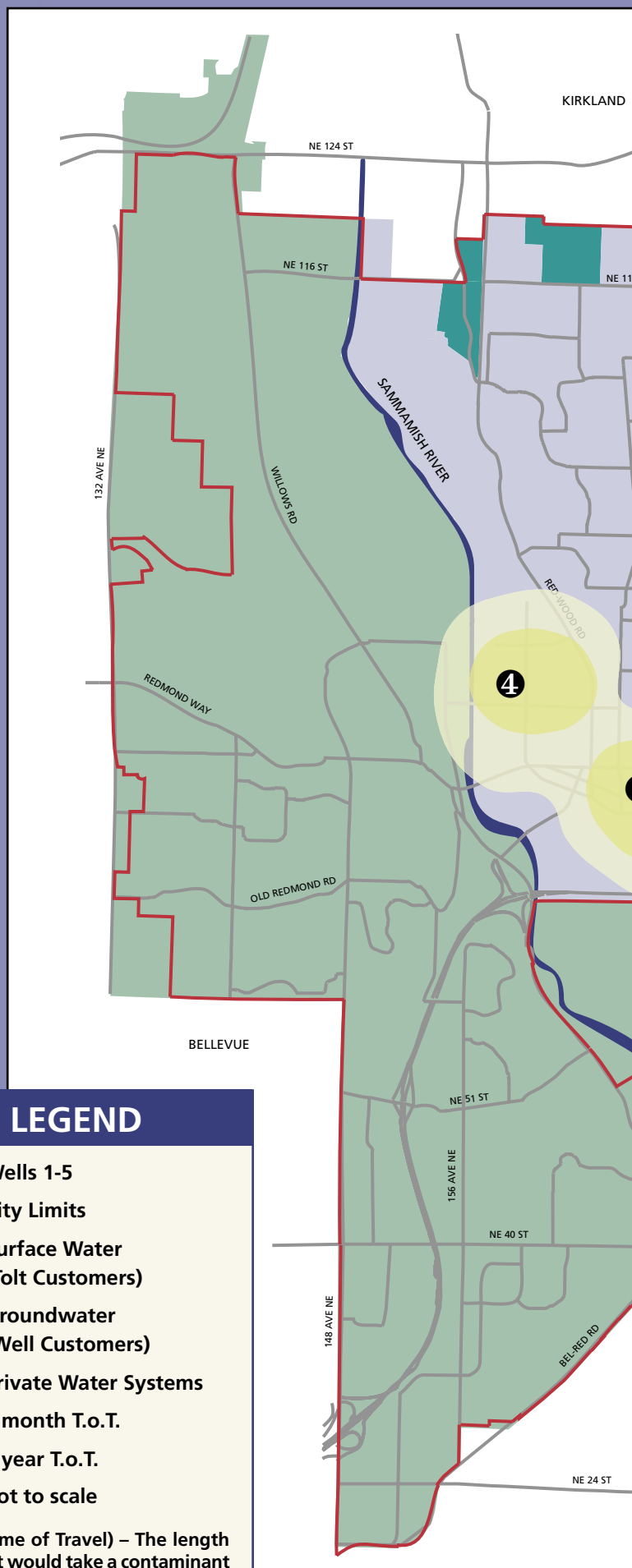
Over 100 contaminants were tested for and not detected, including microorganisms, chemicals, pesticides, herbicides and solvents.

All tests taken in 2003 met State and Federal safety standards.

Water System Security

The City of Redmond understands the challenge and trust involved in providing safe drinking water. For years, our water system and drinking water have been protected by a system of barriers such as alarms, surveillance and daily water testing.

Today, even greater security is required. Government agencies, including *Homeland Security*, as well as the *American Water Works Association* are working together to help communities, like Redmond, meet these new challenges. Security improvements are continuing to be made to further protect our drinking water.



" Water is one of life's most fragile necessities, and to take it for granted is to neglect it."

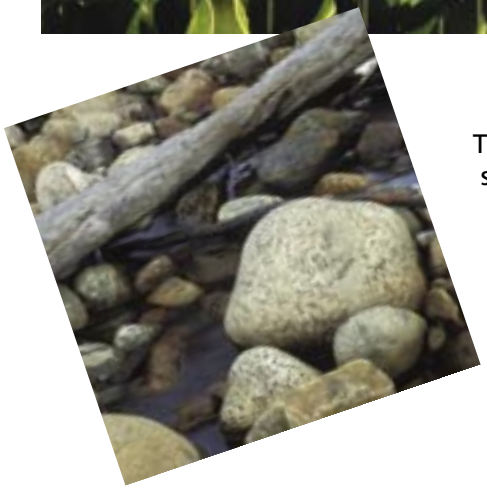
What Is New?

- In 2003 Redmond City Council took a major step to protect our groundwater by passing the *Wellhead Protection Ordinance*.
- Major changes are in store for Redmond's groundwater system. *The Source Improvement Project* involves the demolition of Wells 1, 2, 3 and 5, starting late in 2004. The well houses will be rebuilt using state of the art technology and security devices. Hazardous chemicals, once necessary for water treatment, will be replaced by more benign, yet equally effective, methods. During construction extra drinking water will be supplied by Seattle Public Utilities' Tolt Reservoir.

Hard Water Vs. Soft Water

Redmond's groundwater is medium hard, 90-100 mg/l as CaCO3, or 5-6 grains per gallon. **Redmond's Tolt water is soft**, 25 mg/l as CaCO3, or 1 ½ Grains per gallon.

Hardness comes from two minerals in the water, calcium and magnesium. It is "harder" to make lather with soap using hard water.



Fluoride in Drinking Water

Redmond's drinking water has been fluoridated for over 25 years at the optimal health level of 1 part per million. The Centers for Disease Control and Prevention (CDC) encourages the fluoridation of all public water supplies. The CDC lists fluoridation of public drinking water as one of the ten greatest health achievements of the 20th century.

The American Academy of Family Physicians calls fluoridation of public water supplies "...a safe, economical, and effective measure to prevent dental cavaties." In Redmond, the cost of fluoridation is about .50 cents a year per person.

Did You Know?

30% of bottled water consumed in the U.S. comes from municipal supplies like Redmond's? For example, Aquafina (Pepsi) and Dasani (Coca Cola) are processed municipal waters.

Keeping the Lead Out

2003 Lead and Copper City-wide Monitoring Program					
COMPOUNDS & UNITS	**MCLG**	**90th Percentile Action Level***	**90th Percentile Residential Level**	**# of Homes Exceeding Action Level***	**Sources**
LEAD (ppb)	0	15 ppb	5 ppb	2 out of 39	Corrosion of household plumbing
COPPER (ppm)	1.3 ppm	1.3 ppm	0.34 ppm	1 out of 39	Corrosion of household plumbing
There is no detectable lead or copper in any of the sources of Redmond drinking water. Any detection of lead or copper in tap water most likely comes from plumbing fixures in the home.					

***ACTION LEVEL:** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

General Information About All Drinking Water

The sources of drinking water (both tap and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals, and can pick up substances resulting from the presence of animal or human activity.

Substances and contaminants that could be present in source water include:

- **Microbes** such as viruses and bacteria, which may come from septic systems, livestock and wildlife.
- **Inorganic chemicals** such as salts and metals, which may be naturally occurring or result from urban stormwater runoff, wastewater discharges and farming.
- **Pesticides and herbicides** from agriculture, urban stormwater runoff and residential uses.
- **Organic chemicals** both synthetic and volatile, which are by-products of industry, and can also come from gas stations, dry cleaners, urban stormwater runoff, and septic systems.
- **Radioactive contaminants,** which can be naturally occurring or result from petroleum production or mining activities.

In order to insure the safety of tap water, the EPA regulates the amount of contaminants allowed in public drinking water. The FDA regulates the contaminants in bottled water, which must provide a similar degree of safety.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hot Line at 1-800-426-4791.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline 1-800-426-4791.

For additional information please contact:

Environmental Protection Agency (EPA)
www.epa.gov/safewater
Safe drinking water hotline: 1-800-426-4791

Washington Dept. of Health (DOH)
www.doh.wa.gov/ehp/dw/
1-800-521-0323
Redmond Public Utilities Water Quality
Water quality office: 425-556-2847
www.redmond.gov/util/services/waterquality

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Did You Know?

All About You, Your Health and Your Drinking Water

How much water does a person need to drink?

A recent study claims that 75% of Americans are chronically dehydrated. Yet another study suggests that most healthy people get enough water from their daily diet of all foods and beverages. Our most commonly held belief is that we need eight, 8 ounce glasses of water a day. There is still no consensus on how much is enough, but if we accept even some of the claims of researchers over the past 60 years, the health benefits of adequate hydration are truly remarkable. To name a few:

- Significantly reduced risk of breast, colon, and bladder cancers.
- Less chance of getting the flu, respiratory infections and skin problems.
- More energy, younger skin, fewer headaches.
- Relief from back and joint pain.
- Natural weight loss.

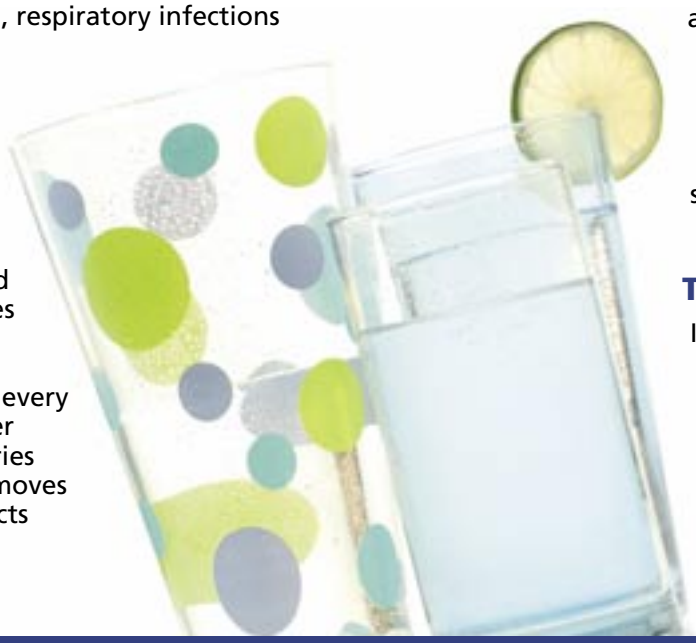
Some reasons why: Water makes up more than 70% of solid tissue in the human body. Besides oxygen, it is the most important nutrient in the body with an important role to play for nearly every major function in the body. Water regulates body temperature, carries nutrients and oxygen to cells, removes waste, cushions joints, and protects organs and tissues.

Drinking Water, the Flu and You

A recent study by a British researcher found that people who drink eight 8 ounce glasses of water a day (that's ½ gallon!) keep their mucous membranes in the nose moist. This acts like sticky flypaper to trap things like dust and bacteria and prevents them from getting into your lungs, thereby helping you avoid the flu.

Drinking Water and Weight Loss

Water naturally suppresses the appetite and helps the body metabolize stored fat. Increasing the amount of water we drink actually reduces fat, because of the working relationship between our kidneys and liver. If our kidneys do not get enough water to function properly, the liver has to help out and can't work full time converting stored fat into usable energy. Consequently more fat is stored in the body.



The Price is Right

If you drank eight, 8 ounce glasses of Redmond tap water every day for one year, the cost would be less than $1.00. And you'd be getting trace nutrients like calcium, magnesium selenium, and zinc that are often removed from highly processed bottled water.

Este informe contiene informacion muy importante sobre su aqua beber. Traduzcalo o hable con alguien que lo entienda bien.

"本报告含有& 用水问题的　要信息.　人翻　或与懂英文的人交流一下."

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